

REMARKS

The above-identified patent application has been reviewed in light of the Examiner's Final Action dated August 12, 2005. Claims 1, 19, 26 and 38 have been amended without intending to abandon or to dedicate to the public any patentable subject matter. Therefore, Claims 1-42 are now pending. As set out more fully below, reconsideration and withdrawal of the rejections of the claims are respectfully requested.

Claims 1-42 stand rejected under 35 U.S.C. §102 as being unpatentable over U.S. Patent No. 6,260,120 to Blumenau et al. ("Blumenau"). In order for a rejection under 35 U.S.C. §102 to be proper, each and every element as set forth in a claim must be found, either expressly or inherently described, in a single prior art reference. (MPEP §2131.) However, each and every element of the claims cannot be found in the Blumenau reference. Accordingly, reconsideration and withdrawal of the rejections of the claims as anticipated by Blumenau are respectfully requested.

The present invention is generally directed to obtaining information by a storage controller in connection with the operation of a network storage system. More particularly, information related to the identity of a host is captured by a storage controller, either directly or through a network switch. Furthermore, Claims 1-18 and 26-37 recite that information related to the identity of a host is transmitted to the storage controller by the host as a result of a host bus scan. Accordingly, information regarding hosts can be collected without requiring the installation of network storage system specific software on the host.

The Blumenau reference is generally directed to storage mapping and partitioning among multiple host processors. More particularly, Blumenau discusses a storage controller for controlling access to data storage that has memory and at least one data port for a data network including host processors. (Blumenau Abstract.) The memory is programmed to define a respective specification for each host processor of a subset of the data storage to which access by the host processor is restricted, and each specification is associated with a host identifier stored in the memory. (Blumenau Abstract.) The programming of memory in the storage controller is further described by Blumenau as storing in memory the respective specification for each host processor and storing associated information identifying each host processor in association with the respective specification. (Blumenau, col. 2, ll. 49-55.) However, there is no discussion in

Blumenau of a storage controller that obtains information identifying a host from a bus scan conducted by that host. That is, Blumenau does not discuss a system in which a storage controller obtains information from a network scan initiated by a host. Instead, Blumenau discusses starting a graphical user interface associated with a storage system (Blumenau, col. 30, ll. 24-26) that provides a host installation facility and entering an installation mode according to which each host controller port is queried by the installation facility of the storage systems graphical user interface for its port worldwide name (WWN) (Blumenau, col. 36, ll. 41-57). The host installation facility then interrogates the data network for the WWNs of the storage subsystem ports, and from the information returned the host user can select a given storage subsystem adapter port WWN to cause an application interface function that reads all of the LUN bitmap entries from the storage subsystem volume configuration database. (Blumenau, col. 36, l. 58 – col. 37, l. 23.) Accordingly, Blumenau does not describe a system in which the WWN or other information related to a host is provided to a storage system controller through a bus scan performed by a host as part of a normal host boot or initiation process.

Blumenau also does not describe a system that uses information identifying a host that is received by a storage controller from a host bus scan to configure access permission with respect to data storage. Instead, Blumenau discusses specialized functions that can be used in connection with accessing storage system volumes that have already been allocated to known hosts. In contrast, embodiments of the invention set forth in various of the claims are related to an automated method in which a storage controller detects hosts and obtains information regarding those hosts as a result of bus scans performed by the hosts as those hosts boot. This allows an administrator to assign specific LUN permissions to specific host ports without requiring specialized host based software, and without requiring manual entry of host identifiers.

In addition, Blumenau does not describe a storage controller that accesses a network switch to discover information identifying a host from a network switch.

With the above as background, it can be appreciated that Blumenau does not describe at least the following italicized features of the independent claims: 1, 19, 26 and 38.

1. A method for facilitating use of a system that includes at least one host and at least one controller, comprising:
performing a host computer boot up of a first host;

as part of said boot up of said first host, said first host conducting a bus scan;

obtaining, by a first storage controller interconnected to said first host by a network, first information for identifying said first host comprising an identity of said at least one host from said first host bus scan, wherein said bus scan conducted at said first host includes transmitting said first information from said first host to said first storage controller, wherein said first storage controller is provided with said first information by said bus scan, and wherein at least a portion of said first information comprising said identity of said first host was not known to said first storage controller prior to said bus scan; and

using said first information by said first storage controller in facilitating use of the system by said first host, wherein said first information for identifying said first host transmitted to first storage controller as part of said first bus scan is placed in a list of hosts having access to data storage through at least said first storage controller.

19. A method for facilitating use of a system that includes at least one host and at least one storage controller, comprising:

accessing, by a first storage controller, a network switch communicating with said first host for obtaining, by said first storage controller, first information for identifying said first host, wherein said first information for identifying said first host comprises a host identifier, and wherein said host identifier is first communicated to said first storage controller as a result of said accessing said network switch by said first storage controller; and

using said first information by said first storage controller in facilitating use of the system.

26. An apparatus for facilitating use of a system that includes at least one storage controller that is accessible by one or more hosts, comprising:

a storage controller that:

(a) includes a network interface for receiving network transmissions from each of the one or more hosts;

(b) *determines, for at least a first host of the one or more hosts, first host identifying first information from a first of said network transmissions when said first network transmission is a result of a bus scan on said first host; and*

(c) *sends first host identifying data indicative of said first information that was determined from said first network transmission to an administration subsystem, wherein said administrative subsystem is provided with said first host identifying data by said storage controller, and wherein said first host identifying data was not previously known or transmitted to said administration subsystem.*

38. An apparatus for facilitating use of a system that includes at least one controller that is accessible by one or more hosts, comprising:

a storage controller that:

(a) *includes a network interface for receiving network transmissions from each of the one or more hosts;*

(b) *accesses a network switch, via a transmission on a network, for obtaining first information for identifying the first host, wherein said transmission is provided to the network by said network interface; and*

(c) *communicates with an administration subsystem related to said first information, wherein said storage controller transmits a first host identifier obtained by said storage controller as a part of said first information to said administration subsystem.*

In summary, the Blumenau reference does not describe a storage controller that receives information identifying a host as a result of a bus scan performed by that host. With respect to comments provided in the Advisory Action mailed on November 10, 2005, it is noted that the reference therein to column 2, lines 63-65 of Blumenau does not disclose transmitting information identifying a host as part of a bus scan by that host. Instead, that section refers to a storage controller seeking to match a host identifier received as part of a request for storage access from the host (i.e., not as part of a host bus scan) to information previously stored in memory (see Blumenau, col. 2, ll. 55-65). Accordingly, Blumenau discusses a storage controller that already has information identifying a host loaded onto it. Blumenau does not describe providing a storage controller with identifying information that was not previously known to the storage controller through a host bus scan. The portion of Blumenau at column 15, lines 16-35

cited in the Advisory Action also does not disclose transmitting host identifier information to a storage controller. Instead, this portion of Blumenau discusses providing a group name as part of a login process, or providing a group name in response to a request from a storage subsystem. However, there is no discussion of providing a host identifier or worldwide name as part of a host bus scan. Accordingly, Blumenau does not disclose a storage controller that obtains information identifying a host from a bus scan performed by the host as generally recited by independent Claims 1 and 26, and the claims dependent therefrom. Therefore, the rejections of Claims 1-18 and 26-37 should be reconsidered and withdrawn.

Blumenau also does not discuss collecting information related to a host from a network switch. With reference to the comment in the Advisory Action to the effect that features related to the collection of information related to a host from a network switch are not in the claims, Applicant notes that such elements are recited by independent Claims 19 and 38, and the claims dependent therefrom. Therefore, for at least these reasons, Claims 19-25 and 38-42 should be reconsidered and withdrawn.

The Blumenau reference also does not discuss using information identifying the host that is obtained by the storage controller either as a result of a host bus scan (e.g., Claims 1 and 26) or that is obtained by the storage controller from a network switch (e.g., Claims 19 and 38). Instead, Blumenau discusses using information identifying a host that is already loaded into a storage controller by other, unspecified, means. Therefore, for at least these additional reasons, Claims 1-42 are not anticipated by Blumenau, and the rejections of the claims should be reconsidered and withdrawn.

The application now appearing to be in form for allowance, early notification of same is respectfully requested. The Examiner is invited to contact the undersigned by telephone if doing so would expedite the resolution of this case.

Respectfully submitted,

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Date: December 12, 2005